REMARKS

In the September 22, 2005 Office Action, the Examiner:

- Rejected claims 46, 47, 49-50, 53-54, 56 and 58 under 35 U.S.C. 102(b) as being anticipated by Protigal *et al.* ("*Protigal*", U.S. Pat. No. 5,307,309);
- Rejected claim 48 under 35 U.S.C. 103(a) as unpatentable over *Protigal* in view of Dell *et al.* ("*Dell*", U.S. Pat. No. 5,513,135);
- Rejected claim 51 under 35 U.S.C. 103(a) as unpatentable over *Protigal* in view of Shepherd ("*Shepherd*", U.S. Pat. No. 4,781,624);
- Rejected claims 52 and 55 under 35 U.S.C. 103(a) as unpatentable over *Protigal* in view of Dougherty et al. ("*Dougherty*", U.S. Pat. No. 4,439,813);
- Rejected claim 57 under 35 U.S.C. 103(a) as unpatentable over *Protigal* in view of Kledzik ("*Kledzik*", U.S. Pat. No. 5,266,912);
- Rejected claim 59 under 35 U.S.C. 103(a) as unpatentable over *Protigal* in view of Burger *et al.* ("*Burger*", U.S. Pat. No. 4,788,766);
- Rejected claims 60-61 under 35 U.S.C. 103(a) as unpatentable over *Protigal* in view of *Kledzik* as applied to claim 52 and further in view of *Geiszler* ("*Geiszler*", U.S. Pat. No. 3,359,510); and
- Rejected claims 62-67 under 35 U.S.C. 103(a) as unpatentable over *Protigal* in view of *Kledzik* as applied to claim 57 and further in view of *Shepherd*.

Applicants retain the claims in their present form and respectfully present arguments for their allowability.

Claim Rejections - 35 U.S.C. § 102

The Examiner has rejected claims 46, 47, 49-50, 53-54 under 35 U.S.C. 102(b) as being anticipated by *Protigal*. For a proper showing that these claims are anticipated by *Protigal*, all elements of each rejected claim must be disclosed in the cited reference. The rejected claims contain one independent claim, namely claim 46, which is repeated below for ease of reference.

> 46. (Original) A memory module, comprising:
> a first circuit board including a first conductive trace disposed on a surface of the first circuit board;
> a first connector including at least one contact connected to the first conductive trace, wherein the first connector is for removably connecting the first circuit board to a second circuit board; and
> a first capacitor including:
> one capacitor electrode connected to the first connector at a junction where the contact connects to the first conductive trace; and
> another capacitor electrode coupled to a node that is at a supply potential.

The Examiner states that:

> Protigal et a1 teaches (in the prior art) A memory module (101), comprising: a first circuit board (103) including a first conductive trace (lead) disposed on a surface of the first circuit board; a first connector (107 for Vcc) including at least one contact connected to the first conductive trace, wherein the first connector is for removably connecting the first circuit board to a second circuit board (inherent the motherboard onto which the SIMM is plugged); and a first capacitor (21) including: one capacitor electrode connected to the first connector at a junction where the contact connects to the first conductive trace (at Vcc); and another capacitor electrode coupled to a node that is at a supply potential (Ground).

Protigal discusses the prior art in relation to Figures 1 and 2 and discusses the invention in relation to the remainder of the Figures 3-11. As the Examiner rightly demonstrates, *Protigal* teaches a SIMM (singe in-line memory module) board 101 having an edge connector 107. However, *Protigal* does not teach a first capacitor that includes one capacitor electrode connected at a junction where the contact connects to the first conductive trace. In fact, *Protigal* only teaches (i) in the case of the discussed prior art, a capacitor on an opposite side of a lead frame connection wire from a semiconductor die[1], and (ii) in the case

[1] *See* U.S. Patent No. 5,307,309 at col. 2, ll. 4-6.

of the described invention, a capacitor on the die side of the inductor, i.e., the side of the lead wire 15 that the device is connected to, as schematically shown in Figure 3, at 23.[2] In other words, *Protigal* teaches locating a capacitance somewhere on either side of the inductance, but does not disclose, teach or suggest connecting a capacitor at the junction where the contact connects to the first conductive trace, as required by independent claim 46. In fact, *Protigal* only discloses coupling the capacitance to a lead wire 15, which cannot be said to be the first conductive trace disposed on a surface of the first circuit board. For these reasons alone, *Protigal* cannot anticipate independent claim 46 or any claims that depend therefrom.

Furthermore, with regard to dependant claim 54, the Examiner states that "Protigal et al teaches a ground plain parallel to and beneath the surface or the board (Column 2 lines 58-66)." The section of *Protigal* referred to by the Examiner teaches a ground-plane buss trace and not a conductive plane at ground potential, as required by dependant claim 54. Accordingly, *Protigal* cannot anticipate dependant claim 46, as it does not disclose, teach or suggest each and every element of the claim.

Also, with regard to dependant claim 56, the Examiner states that "Protigal et a1 teaches pad and signal lines being of different sizes thus they would have different impedance values." The Examiner is respectfully requested to provide support for this statement, as Applicants could find no description or figure in *Protigal* that describes or shows traces and contacts having different sizes, let alone different impedances.

Still further, with regard to dependant claim 58, the Examiner states that "Protigal et al teaches memory devices." Claim 58, however, requires that the memory module further comprises a plurality of memory devices coupled to the first conductive trace, i.e., multiple memory modules coupled to the same trace on the circuit board that is coupled to the capacitor. *Protigal* does not disclose any such common trace to which a plurality of memory devices are coupled. Accordingly, *Protigal* cannot anticipate dependant claim 58, as it does not disclose, teach or suggest each and every element of the claim.

In light of the above, it is respectfully submitted that *Protigal* does not disclose, teach, or suggest all of the limitations of independent claim 46 and its dependant claims, and, as such, *Protigal* cannot anticipate any of the independent claims or any of the claims that depend there from.

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[2] *See* U.S. Patent No. 5,307,309 at col. 2, ll. 54-57 and col. 4, ll. 47-50.

Claim Rejections - 35 U.S.C. § 103

The Examiner has rejected claims 48, 51, 52, 57, 59, and 60-67 under 35 U.S.C. 103(a) as unpatentable over *Protigal* in view of various other references. For at least the reasons stated above, *Protigal* does not teach each and every element of independent claim 46. Accordingly, dependent claims 48, 51, 52, 57, 59, and 60-67 cannot be unpatentable over *Protigal* in view of various other references, as the primary reference of *Protigal* does not teach all of the elements of the independent claim from which these claims depend.

Furthermore, with respect to dependent claim 57, the Examiner states that:

> Protigal et al's capacitor is for decoupling as opposed to impedance matching. Kledzik teaches it is desirable to perform impedance matching on SIMM memory modules. Capacitors are commonly used in impedance matching. It would have been obvious to use a capacitor for impedance matching in the memory module of Protigal et a1 because this would have prevented signal reflection (the reason for impedance matching).

Claim 56, from which dependent claim 57 depends, requires the contact to have a first impedance value and the first conductive trace to have a different second impedance value. Claim 57 requires the first capacitor to reduce the difference between the first impedance value and the second impedance value. As shown above, *Protigal* does not teach (i) the claimed location of the capacitor, (ii) that the contact and first conductive trace have different impedance values. *Kledzik* also does not teach these elements. For these reasons alone, dependent claim 57 cannot be unpatentable over *Protigal* in view of *Kledzik*.

Furthermore, as pointed out by the Examiner, *Protigal*'s use of a capacitor is for decoupling as opposed to impedance matching. *Kledzik*, on the other hand, teaches impedance matching between multiple integrated circuits, and does not disclose, teach, or suggest the use of capacitors to impedance match a contact to a trace. Accordingly, it is implausible that one skilled in the art would have been motivated to combine *Kledzik* with *Protigal*, as (i) *Protigal* does not discuss any need for impedance matching between devices as described by *Kledzik*, and (ii) *Kledzik* is not concerned with impedance matching between a contact and a first conductive trace as required by the instant claim. In light of the above, it is respectfully submitted that the combination of *Protigal* with *Kledzik* cannot render dependent claim 57 unpatentable, as neither the references nor any cited knowledge generally

available to one of ordinary skill in the art provides any suggestion or motivation to modify the reference or to combine reference teachings.

With regard to claims 60-61, the Examiner states that:

> Kledzik teaches handling impedance matching. Kledzik does not teach varying the width of the conductor for impedance matching. Geiszler teaches varying the width of a conductor for impedance matching. It would have been obvious to a person of ordinary skill in the art to use width varying for impedance matching because this would have allowed for handling microwave frequency.

As shown above, *Protigal* does not teach the claimed location of the capacitor. Further, neither *Kledzik* nor *Geiszler* teach the use of a capacitor at all. For these reasons alone, dependent claims 60-61 cannot be unpatentable over *Protigal* in view of *Kledzik* in view of *Geiszler*.

Furthermore, it is again implausible that one skilled in the art would have been motivated to combine *Protigal* with *Kledzik* with *Geiszler*, as (i) *Protigal* does not discuss any need for impedance matching between devices as described in *Kledzik* or along a microwave strip transmission line as described in *Geiszler*, (ii) *Kledzik* is not concerned with impedance matching between a contact and a first conductive trace as described in *Protigal*, (iii) *Geiszler* is not concerned with memory modules as described in *Protigal* and *Geiszler*. In light of the above, it is respectfully submitted that the combination of *Protigal*, *Kledzik* and *Geiszler* cannot render dependent claims 60-61 unpatentable, as none of the references nor any cited knowledge generally available to one of ordinary skill in the art provides any suggestion or motivation to modify the reference or to combine reference teachings.

With regards to claim 62, the Examiner states that:

> Protigal in view of Kledzik teaches a capacitor attached to the inserted circuit board for impedance matching as described above. Shepherd teaches a capacitor attached to the base circuit board for noise filtering as described above. It would have been obvious to include a capacitor on both circuit boards because this would have allowed for impedance matching and noise filtering.

Shepard does not describe or teach any subject matter related to memory modules at all. Rather, *Shepard* teaches using a plug-in electrical connector that includes a filter assembly formed by capacitors on a circuit board. At the very least, none of the cited references teach the claimed location of both the first and second capacitors, and, therefore,

dependent claim 62 cannot be unpatentable over *Protigal* in view of *Kledzik* in view of *Shepard*.

Furthermore, it is again implausible that one skilled in the art would have been motivated to combine *Protigal* with *Kledzik* with *Shepard*, as (i) *Protigal* does not discuss the need for impedance matching on a second circuit board, (ii) *Kledzik* is not concerned with impedance matching between a contact and a first conductive trace as described in *Protigal*, (iii) *Shepard* is not concerned with memory modules as described in *Protigal*, and (iv) *Shepard* relates to noise filtering which is unrelated to both *Protigal* and *Kledzik*. In light of the above, it is respectfully submitted that the combination of *Protigal*, *Kledzik* and *Shepard* cannot render dependent claim 62 unpatentable, as none of the references nor any cited knowledge generally available to one of ordinary skill in the art provides any suggestion or motivation to modify the reference or to combine reference teachings. Claims 63-67 depend from claim 63, and, accordingly, also cannot be unpatentable over the combination of *Protigal*, *Kledzik* and *Shepard*.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is now in a condition for allowance. However, should the Examiner believe that the claims are not in condition for allowance, the Applicant encourages the Examiner to call the undersigned attorney at 650-843-7519 to set up an interview.

If there are any fees or credits due in connection with the filing of this Amendment, including any fees required for an Extension of Time under 37 C.F.R. Section 1.136, authorization is given to charge any necessary fees to our Deposit Account No. 50-0310 (order No 060809-0080-US). A copy of this sheet is enclosed for such purpose.

Respectfully submitted,

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